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Integrated planning and management of land resources

Report of the Secretary-General

Addendum

Sustainable mountain development*

Contents

		Paragraphs	Page
I.	Introduction	1–2	3
II.	Progress on major themes	3–28	3
	A. Mountains, rural development and food security	4–8	3
	B. Conservation of biological diversity	9–11	4
	C. Fresh water	12–14	5
	D. Forests	15–18	6
	E. Tourism	19–21	6
	F. Climate change	22–23	7
	G. Culture and traditional knowledge	24–25	7
	H. Research considerations	26–28	7

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III.	Progress in the implementation of chapter 13	29–52	8
	A. Action at the national and regional levels	29–38	8
	B. Inter-agency mechanisms	39–40	9
	C. Major groups: international and regional networking	41–47	10
	D. Funding and financial mechanisms	48–49	11
	E. International Year of Mountains	50–52	11
IV.	Emerging issues and priorities for further action	53–58	12
	A. Conflict	53	12
	B. Highland/lowland interaction	54	12
	C. Policy and law	55	12
	D. Planning and management at the national and local levels	56	13
	E. National hazards and risks	57	13
	F. Funding	58	13

I. Introduction

1. Mountain ecosystems contain an integrated complex of natural resources that are closely linked in space and time. Those who inhabit the mountains generally depend directly on many of these resources for their livelihoods and tend to utilize and manage them through a combination of land-use practices such as agriculture, forestry and livestock production. With these characteristics, sustainable mountain development is directly linked to "integrated planning and management of land resources", the sectoral theme for the current session of the Commission. The present report was prepared within this context and describes progress made in the implementation of chapter 13 of Agenda 21 (Managing fragile ecosystems: sustainable mountain development) since the most recent report on the chapter was issued in 1997 (E/CN.17/1997/2/Add.12).

2. At an institutional level, the way in which chapter 13 has been organized and the mechanisms that have developed over recent years to promote collaboration and cooperation in achieving its objectives have been an important means of bringing together a variety of sectoral concerns and approaches, as well as different types of institutions, including non-governmental organizations, Governments and intergovernmental organizations. Improved cross-sectoral cooperation and interinstitutional collaboration have resulted in many initiatives that address both conservation and development concerns.

II. Progress on major themes

3. Chapter 13 contains two programme areas for action:

(a) Generating and strengthening knowledge about the ecology and sustainable development of mountain ecosystems;

(b) Promoting integrated watershed development and alternative livelihood opportunities. Although each area has its own particular significance, they are often dealt with together in the framework of an integrated ecosystem approach to sustainable mountain development. The section below will briefly discuss progress made under major themes related to chapter 13.

A. Mountains, rural development and food security

4. Mountain communities are among the world's poorest and face a number of difficult development challenges due to specific mountain-related conditions, including limited land resources, marginal agricultural conditions, isolation, and scant equipment and infrastructure. Food insecurity is a serious problem in some mountain regions and a major impediment to achieving other development and conservation objectives. Thus, eliminating poverty and ensuring food security in mountain areas is a high priority of chapter 13.

5. Mountain areas are the origin of a number of important cultivated species that contribute substantially to the world's food basket. They continue to be an important source of genetic resources with good potential for improved agriculture and food production. The linkages between mountain food security and rural development are being approached from various viewpoints that aim to improve agriculture and food production, storage, distribution and exchange. They include exploiting the vast potential of mountain plant and animal resources; improving the management and use of water resources; and organizing the social aspects of mountain communities.

6. Agriculture and food production are expected to benefit significantly from research on biological diversity in mountain areas. Many current efforts to improve the management of water resources for food production are building on a number of traditional technologies and practices. Initiatives to inventory and assess those technologies are being undertaken in many countries. At its sixth session, the Commission covered the issue of water resources, and progress in cooperation and management is likely to take place at the national, regional and international levels.

7. Livestock production and management in mountain areas is also an important contributing factor to food security and rural livelihoods. Many aspects of it were recently explored during the International Symposium on Livestock in the Mountain/Highland Production System (7-10 December 1999, Pokhara, Nepal), organized by the International Centre for Integrated Mountain Development (ICIMOD), the International Livestock Research Institute (ILRI) and FAO. Issues related to the changing patterns of

livestock production are discussed in a background paper prepared by FAO for the Commission.

8. Regarding rural development and economic development in general, mountain communities have been calling for a balance between conservation and development; mountain ecosystems should serve both. In Europe, mountain municipalities, in particular in France, have been adamant about the need to develop and use mountain resources, in particular forests, sustainably. Many EU initiatives have served not only to recognize the importance of traditional local agricultural products but also to protect them and facilitate their distribution. Many developing countries (e.g., Mexico, Bolivia, Nepal, Peru and Yemen) have been active in integrated mountain watershed management and development projects. Some major regional programmes are now contributing to the development of alternative sustainable livelihood systems in mountain watersheds, including work in the Andes carried out by the Consortium for Sustainable Development of the Andean Ecorregion (CONDESAN), the African Highlands Initiative of the International Centre for Research in Agroforestry (ICRAF) and ICIMOD's comprehensive programme for the Hindu Kush/Himalaya region. These consider the whole range of interventions — from natural resource husbandry, the conservation of basic ecological processes, the use of local technologies and overall support to local community development in the framework of national economies.

B. Conservation of biological diversity

9. Mountain areas are known to be important but fragile reservoirs of biological diversity. In the tropics they often contain a greater concentration of genetic resources than lowland forest ecosystems, with typically higher levels of endemic species. The issue of how to conserve and sustainably use these resources in a variety of settings, in both industrialized and developing countries, is a major challenge today. The issues are very different, depending on the context. In some areas, rapid economic development with little concern for environmental impacts, is posing a real threat to biological diversity. Mounting poverty and increasing population growth in some developed and developing countries is creating unsustainable pressure on already endangered plant and animal species. The illegal trade in animals is also having a major impact in some mountain regions and is more difficult to control in rough mountain terrain, where accessibility is often poor.

10. Protected areas play a critical role in the conservation of biological diversity in mountain regions: almost one third of the designated natural World Heritage Sites are protected mountain areas. While protected area management activities in mountainous regions have been reinforced in many countries, establishing parks and protected areas without paying adequate attention to rural development concerns has often led to failure. There is today an increasing number of innovative examples of more integrated approaches to biodiversity conservation, which combine both human development and natural resource conservation and give local populations a stake, economic and otherwise, in sustainably managing biological diversity. The Mountain Protected Area Network of the World Conservation Union (IUCN), together with many international and national non-governmental organizations, has done a great deal to promote and facilitate this approach. The following projects are illustrative:

(a) The joint UNU/UNEP/GEF programme entitled People, Land Management and Environmental Change (PLEC) has developed participatory and sustainable models of *in-situ* agro-biodiversity management, based on small farmers' traditional knowledge. In participation with local farmers, demonstration sites have been established in mountain ecosystems of China, Ghana, Guinea, Jamaica, Kenya, Papua New Guinea, United Republic of Tanzania and Thailand;

(b) The Global Environment Facility (GEF) is currently funding biodiversity conservation projects in mountain areas in some 21 countries. The GEF Transcarpathian Biodiversity Protection Project, in which Poland, Slovakia and Ukraine cooperate, is particularly innovative in approach. It includes the training of staff and the involvement of the local people in sustainable revenue generation through tourism, forestry and hunting. In 1998, it received international recognition as the first trilateral biosphere reserve under UNESCO's Man and the Biosphere (MAB) Programme;

(c) In the Altai mountains of Central Asia a transboundary biosphere reserve is being developed, in response to the 1998 Altai Declaration of Urumqi. It

involves the Altai region of the Russian Federation and of China, and parts of eastern Kazakhstan and Western Mongolia;

(d) A key programme of the Central American Commission on Environment and Development (CCAD) is the Meso-American Biotic Corridor linking protected areas in the mountains of seven countries in the region. Building on this initiative and other mountain corridor projects such as Yellowstone-to-Yukon, the Wildlife Conservation Society, with collaboration from IUCN, has recently begun an ambitious programme of developing a biological corridor of the Americas from Tierra del Fuego to Alaska, along the mountain backbone of the two continents. The corridor will connect the existing series of protected areas;

(e) In the Hindu Kush/Himalaya region ICIMOD is running a project entitled Conservation of Biological Diversity in Mountain Ecosystems, with activities centred on biodiversity assessment, management and applied ethnobotany. ICIMOD and UNEP also jointly developed two models for integrated management of Himalayan ecosystems;

(f) The Mountain Institute (TMI) has been active in community-based biodiversity conservation, including support to programmes in the Himalayas in Nepal, in the Tibet Autonomous Region of China, in India, and in the Andes, centred in Peru and in Ecuador. Also in the Andean region, the International Potato Center (CIP) and UNEP have started an analytical study on *in-situ* conservation of agro-biodiversity;

(g) Efforts to link biodiversity conservation with cultural and spiritual values have resulted in a UNESCO-led initiative, with financial support from the Government of Germany, for a project called Sacred Sites: Cultural Integrity and Biological Diversity.

11. An important global research effort, currently under way, is attempting to carry out a major assessment of mountain biodiversity. The Diversitas Programme and the Swiss Academy of Sciences created a Global Mountain Biodiversity Assessment research network and project in 1999. The assessment is expected to enhance the knowledge base and identify gaps for further research, ultimately contributing to improvements in areas such as food production and pharmaceutical products.

C. Freshwater

12. The importance of mountain regions for a sustainable supply and quality of fresh water has been increasingly recognized as a central issue in recent years. In its 1998 review of strategic approaches for freshwater management, the Commission on Sustainable Development stressed the need for an integrated approach, with emphasis on the social dimension of freshwater management, and identified mountainous regions and other fragile ecosystems as particularly sensitive areas where incentives may be necessary to promote land-use practices appropriate to local conditions in order to protect or rehabilitate freshwater resources. A Swiss-supported publication entitled "Mountains of the world: water towers for the 21st century", prepared for the Commission at its sixth session, provided a number of case studies illustrating various issues and challenges from throughout the world.

13. A number of national and regional initiatives and actions have been taken to join forces and plan the development and conservation of common key mountain ranges and watersheds for water resource development and sharing. In central Asian States the importance of linkages between mountainous areas and dryland areas downstream has been stressed in many cases. Linkages are also very relevant in other areas, such as the Fouta Djallon highlands, where a ministerial conference in West Africa focused on supporting conservation and development efforts in the area's major watersheds, aimed at the protection and sustainable management of water resources for the entire region.

14. An important issue related to fresh water is hydropower production in mountain areas. Large hydropower schemes have become quite controversial. The public is increasingly aware of their potential threat to valuable and unique habitats and of the socio-economic disruption associated with the displacement of local populations. Consequently, with newer hydropower projects, monitoring of their impacts has increased. There is also greater recognition that decentralized, small scheme hydropower production in mountain areas may in some cases be more appropriate than centralized hydropower production in large and more vulnerable power plants. This is particularly true in developing countries and areas with high seismic activity. Hydropower production in mountain areas can

positively influence watershed management since it may lead to increased conservation efforts in the respective watershed, including forest protection or afforestation programmes. It can also have a positive connection with agricultural production through irrigation.

D. Forests

15. The importance of forests and trees in mountain ecosystems has become more evident and received greater attention over the past few years. The Commission's Intergovernmental Forum on Forests at its second and third sessions drew specific attention to mountain forests, in addition to those of other fragile areas, as deserving of special attention, in light of the critical role they play. The media have made the public more aware of the potentially damaging effects of deforestation in mountainous areas, such as the recent disastrous floods in China and other parts of the world. Awareness of the environmental, social and economic roles of mountain forests was heightened by an electronic conference, organized by the Mountain Forum, on "Mountain people, forests and trees". The conference brought together the experiences of mountain people around the world, with the goal of contributing to global knowledge of how mountain forests and trees are important not only for mountain people but also for the many people living in lower-lying regions.

16. Recent efforts to improve understanding and knowledge of tropical "montane" cloud forests, an increasingly threatened mountain ecosystem, have been making headway. The Tropical Montane Cloud Forest Initiative was begun in 1999, in a partnership including IUCN, the World Wildlife Fund (WWF), UNESCO, UNEP, the World Conservation Monitoring Centre (WCMC) and IUCN/Netherlands. Its aim is to focus greater attention on this unique ecosystem and to promote more funding for research and development programmes. The International Hydrological Programme of UNESCO is currently producing a popular document on montane cloud forests in an attempt to create greater public awareness.

17. National forest programmes, as defined by the Intergovernmental Panel on Forests, which met from 1995 to 1997, recognize the importance of considering the specific characteristics and needs of forests in mountains and key watersheds. Synergies between the various frameworks that are related to forestry must be strengthened at the national level to ensure that forestry activities in mountain areas are coherent and that the potential benefits of each activity are maximized. A number of mountainous countries are already engaged in the process of formulating national forest programmes.

18. As part of its series of information brochures on mountain topics, prepared for each session of the Commission since 1997, the Government of Switzerland has prepared a brochure on mountain forests, which will be presented at a side event during the eighth session.

E. Tourism

19. Tourism has become a major issue for mountain areas in both developing and industrialized countries. As pointed out at the nineteenth special session of the General Assembly, tourism is one of the world's largest industries and fastest growing economic sectors. Although the impacts of tourism in mountain areas can be very positive in economic terms, the environmental and social consequences can be very damaging, if not carefully managed. Ecotourism activities are gaining importance in many mountain regions and provide an opportunity for diversification of sources of income and sustainable livelihoods for the mountain population.

20. The General Assembly declared 2002 not only the International Year of Mountains but also the International Year of Ecotourism. During the discussion on tourism by the Commission at its seventh session, delegations noted that there were obvious linkages between the two and that mountain regions represented a significant portion of the tourism industry. "These remote, fragile and highly biodiverse ecosystems are homes to unique cultures and traditions which draw tourists from an increasingly urbanized world."[1]

21. Practical action includes the development of the Ecotourism Management Plan for the Huascaran National Park in Peru, with the assistance of The Mountain Institute. The Institute is also supporting work in Sikkim, India and Nepal on biodiversity conservation through ecotourism, by promoting village enterprises. The Mountain Forum hosted an electronic conference which resulted in a publication entitled

"Community-based mountain tourism: practices for linking conservation and enterprise". The World Mountaineering and Climbing Federation (UIAA) Working Group on Access and Conservation, in cooperation with IUCN, organized a seminar (Barcelona, May 1998) on ways of monitoring, assessing and minimizing the environmental impacts of climbing and mountaineering. The Working Group is currently considering, as a follow-up to the seminar, the issue of maximizing the economic benefits of mountaineering and trekking to mountain communities.

F. Climate change

22. High mountain ecosystems are generally considered particularly sensitive to global warming. They increasingly appear to be useful indicators of climate change effects, which are expected to be more pronounced on alpine vegetation than on vegetation at lower altitudes. Human land use, which could mask climate-related change, is often negligible in high mountain regions. Consequently, there has been a recent increase in mountain research related to climate change and in national attention devoted to this issue. In Switzerland an important element of the climate change discussion relates to the potentially damaging impact that global warming could have on winter tourism. Researchers and decision makers are looking more seriously at the possibility that higher winter temperatures could result in less snowfall at lower elevations, forcing many ski resorts to close down and resulting in huge economic losses and significant employment problems.

23. In the area of research, the "Gloria" programme was recently initiated at the University of Vienna. It is looking at evidence of climate-induced upward-migration of mountain plants. The current proposal calls for a global observation network in high mountain ecosystems. The network would contribute to the implementation of the Mountain Initiative of the International Geosphere/Biosphere Programme (IGBP), which originated with a workshop in Kathmandu in 1996 and was endorsed in 1999. It will involve four of the core projects of IGBP, one of which is the Land-use/cover change core project, being implemented jointly with the International Human Dimensions Programme (IHDP).

G. Culture and traditional knowledge

24. There is new interest in the inventory, assessment, defence and enhancement of the cultural wealth and traditional knowledge of mountain communities. Such activities can be carried out individually by international organizations or included in integrated rural development activities being undertaken in the field. In Yemen, for instance, with support from UNDP and FAO, a major project on managing environmental resources is taking inventory of the knowledge and practices of local communities in the relevant area of water, soil and plant resource conservation. Morocco is developing a number of activities for the cultural and economic development of mountain regions and communities, with emphasis on the cultural dimension. The FAO/Italy global project on participatory upland conservation and development has been very effective in capitalizing on local human resources and their traditional practices. An important FAO-implemented, Dutch-funded regional project in Asia, the Participatory Watershed Management Training in Asia project, has been documenting with interested Governments and putting to practical use the huge wealth of land husbandry and soil conservation practices available in the region. Similar initiatives are being developed elsewhere in Africa, within the ICRAF-led African Highlands Initiative and other initiatives of ILRI, and in Latin America, with CIP/CONDESAN.

25. The cultural heritage of mountain communities is well covered in the activities of the UNESCO World Heritage Convention and also in the framework of the UNESCO MAB project on mountain ecosystems. Initiatives already taken by countries such as Italy, France and Kyrgyzstan for the preparation and observance of the International Year of Mountains are an indication of the importance that the cultural dimension of mountain communities will have for all countries in observing the Year.

H. Research considerations

26. Research efforts undertaken in accordance with chapter 13 have recently begun to receive greater attention. In 1996, the International Union of Forestry Research Organizations (IUFRO) established the Task Force on Forests in Sustainable Mountain Development which is preparing a state-of-knowledge report that is

expected to help orient research and development efforts in the coming years. A IUFRO interdivisional meeting on forest ecosystems and land use in mountainous areas was held in Seoul in September 1998.

27. The second phase of ICRAF's African Highlands Initiative, dealing with research on food security and income generation, is now being implemented in Ethiopia, Kenya, Madagascar, the United Republic of Tanzania and Uganda. It is one of the components of the Global Mountain Initiative of the Consultative Group on International Agricultural Research (CGIAR), a global ecoregional research programme for sustainable agricultural development in mountain areas, led by CIP in Peru. Within its second regional collaborative programme (1999-2002), ICIMOD continues to carry out research on mountain resource management and social organization in the Hindu Kush/Himalaya region and on other internationally relevant mountain issues.

28. The Alpine Observation and Information System (ISPRA), based in Italy, had projects in 1997-1998 involving environmental and socio-economic indicators, communications, information, research systems, data sources, a thesaurus and mapping. The European Commission, within its Environment and Climate Programme, is conducting collaborative research in the Alps and other mountain ranges on the effects of land-use changes on mountain ecosystems and on arctic/alpine ecosystems. Other projects involve the responses of remote mountain lakes and timberlines to environmental change, the effects of climate change on alpine and arctic streams, and desertification in Mediterranean mountains. The Mountain Institute has established a dedicated research and demonstration centre, recently designated a biological field station, at its Spruce Knob Mountain Research Center in West Virginia, United States of America.

III. Progress in the implementation of chapter 13

A. Action at the national and regional levels

29. In implementing chapter 13, one of the most important challenges is how to translate the ideas and concepts of sustainable mountain development into real and concrete action, in particular at the national and subnational levels. The achievement of practical and lasting results on the ground in a way that positively affects mountain inhabitants at the household level will be the main criterion of success.

30. There has been progress in this direction, but the pace and extent of the action has been less than what is needed to meet the challenges effectively and adequately. A noteworthy exception is the case of Mexico, which was one of the first countries to embark on a national planning process to formulate a sustainable mountain development programme. The process, supported through the FAO Technical Cooperation Programme, began in 1997. It encompassed all the elements of a sustainable national mountain programme, including participation of all stakeholders, training and capacity-building at different levels, and development through pilot activities.

31. China has recently devoted increased resources and attention to mountain development and conservation, with significant results on the ground. In 1996 a major three-year national demonstration project on integrated mountain development was launched in 114 counties in 30 provinces throughout China. Project coordination is taking shape with the direct involvement of 11 ministries and the Bank of China. In the Russian Federation, the Institute of Sustainable Mountain Development at the North Caucasus State University, Vladikavkaz, was established to address mountain issues. In 1998 a mountain law was passed there.

32. The experience of the FAO/Italy interregional project for participatory upland conservation and development was first reported on at the third session of the Commission. The project achieved a great deal in terms of its overall contribution to knowledge and understanding of the use of participatory methodologies and an integrated watershed management approach to conservation and development in mountain regions. Its impact has already spread to areas beyond those originally covered. In Burundi, for example, 12 of the country's 16 provinces are currently using participatory planning for integrated watershed management based on the project's original pilot experience, and the approach has been institutionalized in the responsible ministry.

33. In Europe, the FAO/European Forestry Commission Working Party on the Management of

Mountain Watersheds, at its twenty-first session (Marienbad, Czech Republic, 6-11 October 1998) had as its main theme "Integrated watershed management". Also of significance was a series of seminars organized by EUROMONTANA in 1999 (St. Etienne, France; Victoria Gasteiz, Spain; and Cracovia, Poland) on high-value products and sustainable mountain development, which linked mountain associations in 20 countries. A conference is scheduled for March 2000 in Trento, Italy.

34. In Africa, progress has occurred in several areas, including participatory watershed management activities in Morocco through a UNDP/FAO-assisted project and work towards developing a national strategy for the conservation and development of mountain areas. Ongoing efforts in the Fouta Djallon region for integrated upland development and resource management aim to protect the water supply of the West African rivers that flow from the massif. Other activities in conservation and development are being undertaken in central, eastern and southern Africa and in Madagascar. The Rwenzori Mountains conference, organized and hosted by Makerere University (Kampala, Uganda, 1996) was an important African mountain initiative. A mountain resource centre has since been established at Makerere University.

35. In Asia, significant action has taken place in a number of regional processes supported by a strong institutional context. ICIMOD has continued to focus research and development activities in the Hindu Kush/Himalaya region, in addition to the strong support to networking already described above. A noteworthy interdisciplinary watershed management initiative, being carried out in four of ICIMOD's partner countries along a west/east transect through the Himalayas, is the People and Resource Dynamics Project. It is being implemented in areas where there is generally high pressure on natural resources, and it aims, through monitoring and increased understanding of various processes, to develop guidelines for policies and programmes in this field. In Pakistan a new Himal conservation strategy that extends from the summits to the Bangladeshi coast is being implemented with the support of IUCN.

36. The International Board for Soil Research and Management (IBSRAM) is supporting work in Asia leading to the development of methods and concepts focused on urgent land degradation problems, including problems in hilly or mountainous terrain and in particular on the sustainable management of sloping lands. Community forestry and the development of participatory approaches and tools for mountain areas in Asia continues to be facilitated by the work of the Regional Community Forestry Training Centre (RECOFTC), especially through the development of curricula and training materials.

37. In Latin America good progress has been made overall in sustainable mountain development through a variety of regional programmes and projects, supported and assisted by CIP, CONDESAN, FAO and a number of donor and non-governmental organizations. The Andean Mountains Association (AMA) held an important symposium (Quito, Ecuador, December 1998) on sustainable mountain development in the region which brought together researchers, practitioners and donor representatives to discuss a wide variety of issues and help orient future work. The Mexican experience referred to above in national planning for mountain areas is now being shared with other member countries of the FAO-supported Technical Cooperation Network on Watershed Management in Latin America and the Caribbean so as to stimulate and facilitate similar exercises in the region.

38. Although real progress has been achieved since 1997, there is a commonly felt need for more action and further cooperation to carry out mountain development and conservation activities that result in meaningful change at the community and household levels. Although awareness-raising continues to be an important issue, many countries also require capacity-building and technical assistance to ensure that the concepts of chapter 13 are translated into concrete action. Additionally, there remain significant gaps in knowledge and information on the extent to which progress is being made, especially at the country level.

B. Inter-agency mechanisms

39. Inter-agency collaboration and cooperation, a mainstay of activities in support of chapter 13, have continued and remain strong. Two meetings of the Inter-agency Group on Mountains, with participants from both United Nations and non-United Nations organizations, with FAO as coordinator, were held in 1999 (March and October) with the purpose of discussing preparations for the International Year of Mountains. The Group has expanded its membership to

include major actors from sectors that were not initially represented when the Group was first established in 1994. The Group continues to play an important role in steering and advising on implementation of chapter 13 and on the Year. It has forged new and innovative partnerships among non-governmental organizations, intergovernmental organizations and Governments and has consolidated and focused action and attention on areas of strategic importance to chapter 13.

40. FAO, as task manager of chapter 13, and in its recently expanded mandate as lead agency for the International Year,[2] has reactivated the Organization's interdepartmental working group on mountains. The group meets on an ad hoc basis to provide multidisciplinary support in addressing key concerns and issues of mountain development and conservation and ensures that the complete range of FAO expertise and resources relating to food security, poverty alleviation, rural development and natural resource conservation are being fully mobilized in this effort.

C. Major groups: international and regional networking

41. Overall, some of the most significant recent progress in implementing the "mountain agenda", as the issues addressed in chapter 13 are often called, has been in the area of networking and information exchange. The Mountain Forum was established in 1995 and has become the main institutional mechanism for networking on mountains. Its membership has grown to more than 1,300 for the global node alone — i.e., not counting those that are subscribed exclusively to one of the regional nodes. The Forum continues to expand, mainly through a decentralized process by which regional nodes have been established in Asia/Pacific, Latin America, Africa, Europe, and North America. Subregional nodes also exist in several areas. The Forum has promoted greater awareness of critical mountain issues and fostered mutual support for greater action at the local level. Among its services are electronic conferences, discussion lists, an on-line library and documentation centre, membership contact information and an updated calendar of key mountain-related events.

42. At the international level, an important mountain conference, entitled the "World Mountain Forum", will be held in June 2000 in France. The event is meant to provide an opportunity, primarily for representatives of mountain communities throughout the world, to meet and discuss issues of common interest and to establish networking connections for continued exchange.

43. At the regional level, new and innovative mountain networking and collaborative mechanisms are being established, and existing ones are being reinforced. In Latin America the Andean Mountains Association, developed with assistance from UNU, is playing a more active role in mobilizing Andean scholars, educators and researchers to address sustainable mountain development issues. The group organized an important symposium (Quito, Ecuador, December 1998) which included, in addition to the normal membership, a number of representatives from development and conservation organizations working at the field level.

44. In Africa, major issues, needs and activities in mountains and highlands still need to be further documented and publicized. This is happening progressively as governmental and non-governmental initiatives take hold in various mountainous or highland areas, including the Maghreb and the Fouta Djallon region of Africa. The African Mountains Association was established in 1987 with assistance from UNU to look into African perspectives on mountain ecosystems, and it continues actively to pursue and report on African mountain research and development. The most significant recent development in terms of networking and collaboration has been the establishment of the African node of the Mountain Forum at a workshop of key organizations and stakeholders in August 1999. This was the culmination of a long process supported by FAO, UNEP, ILRI and ICRAF. Through an initial agreement, ICRAF will temporarily host the node. Identifying adequate funding to maintain this regional network and gaining a more thorough knowledge and understanding of the institutional landscape of mountain organizations in Africa are key immediate concerns.

45. North America faced a similar situation until recently, when a workshop similar to the one held in Africa was convened at the Banff (Canada) Centre for Mountain Culture in September 1999. It lay the groundwork for a major mountain meeting planned for North America and established a regional Mountain Forum node to serve Canada, the United States and Mexico.

46. In Europe, networking on mountain issues has been quite active over the past few years. The European Mountain Forum, established in 1998, with support from the Government of Switzerland and IUCN, has grown quickly, with a membership of nearly 300 by mid-1999. The network covers mountain ranges throughout Europe, with decentralized local nodes operating in the Carpathians, the Caucasus, the Mediterranean mountains, and the middle mountains of western and central Europe. Until recently, mountain forests were dealt with at the European level mainly through the follow-up process to decisions taken at the European Ministerial Conference for the Protection of Forests in Europe. That process is now led by the European Observatory on Mountain Forests (EOMF), in collaboration with FAO and IUFRO.

47. Mountain networking in Asia is channelled mainly through the Asia/Pacific Mountain Network (APMN), which has been operating since early 1995 and has nearly 400 registered members. Its secretariat is based at ICIMOD, Kathmandu, Nepal. APMN has organized several regional consultations, conferences and meetings on sustainable mountain development. It has several networking and information-sharing activities, such as a home page, an electronic discussion list, and a biannual newsletter. It will be organizing its first regional electronic conference shortly and has started a small grants programme to facilitate capacity-building on networking and information-sharing in the region. In Central Asia, it is also supporting a networking capacity-building initiative for sustainable mountain development in the newly independent Central Asian Republics. In the Russian Federation the UNESCO-sponsored MAB-6 programme has continued to assist in the area of networking and information exchange; the *Eurasia Mountain Newsletter* was launched in Russian with a distribution to some 200 members.

D. Funding and financial mechanisms

48. Investment in the sustainable development of mountain areas is still inadequate, in terms both of domestic public spending and official development assistance (ODA). Funding through global and regional mechanisms such as the Global Environment Facility and the regional development banks needs to be mobilized in ways that address more directly the specific needs and concerns of mountain regions rather than through more traditional funding approaches that simply include mountain areas among others in national development initiatives. There is also a need to look at the potential of using more innovative mechanisms such as debt-for-nature swaps, which have already proved to be very useful and practical.

49. Financial mechanisms and incentives are attracting increased attention. The problem of inequities between highland and lowland regions has been discussed in many of the consultations held during the reporting period. In fact, funding for mountain development and conservation is needed not only at the global, regional and national levels; it is particularly important at the community level in support of activities aimed at the conservation of watersheds, the funding of infrastructure to facilitate access and communications between communities, and general rural development in local communities.

E. International Year of Mountains

50. Since 1997 one of the most significant political decisions regarding mountains has been General Assembly resolution 53/24 of 10 November 1998, in which 2002 was declared the International Year of Mountains. This decision has placed the core issues of chapter 13 in an even brighter international spotlight and provides an unparalleled opportunity to implement sustainable mountain development on a practical and concrete level which effectively reaches mountain households. The Assembly invited FAO to serve as lead agency of the Year, in collaboration with Governments, UNEP, UNDP, UNESCO and other relevant organizations of the United Nations system. It also encouraged all Governments, the United Nations system and other actors to take advantage of the Year to increase awareness of the importance of sustainable mountain development. It further called upon all three entities as well as the private sector to make voluntary contributions in support of the Year. A report of the Secretary-General on the state of preparations for the Year is to be submitted to the Assembly at its fifty-fifth session.

51. Preparations for the observance of the Year began shortly after the resolution was adopted, when FAO convened the fifth meeting of the ad hoc Inter-Agency Group on Mountains to brainstorm on activities to be envisaged during the Year. The meeting was attended by 13 international governmental and non-

governmental organizations and by permanent representatives of FAO member Governments and many observers. It produced a wealth of ideas and programme elements which will be incorporated into the preparatory process for the Year. Since funding from international agencies is not expected to be sufficient to cover the needs for the Year, it was suggested that a combination of international public funding, bilateral and multilateral funding and private interventions and initiatives be adopted. It was agreed that a concept paper should be prepared to clarify the overall strategy, approach and substance of the programme.

52. A draft concept paper was subsequently prepared by FAO and was discussed at the sixth meeting of the Inter-Agency Group (Cusco, Peru, 2 October 1999). The framework for the Year is based on chapter 13 of Agenda 21, the objectives and the institutional, thematic and managerial structures, as well as the core activities and fund-raising needs, are set forth in the draft concept paper. The FAO-managed core programme for the Year has been estimated to require extrabudgetary funding on the order of US$ 5 million. The need to enlist donor governmental support has been emphasized.

IV. Emerging issues and priorities for further action

A. Conflict

53. Especially in recent times, mountain areas are increasingly the site of social conflict, ethnic strife and war, resulting from a combination of very complex issues. Conflict in mountain areas can be caused by diverse factors such as poverty, ethnic tension, competition for scarce resources and even the geographical isolation of mountain areas which makes them likely refuges for armed opposition groups. Efforts to carry out conservation and sustainable development initiatives are often stymied by these realities. The issue of security and conflict resolution is very relevant to efforts to achieve sustainable approaches to mountain development and conservation. The International Year of Mountains provides a strong platform for addressing this issue, since promoting international peace was one of the original ideas behind the observance of international years.

B. Highland/lowland interaction

54. Mountain areas are open systems which intensively interact with their surrounding regions. Awareness of the importance and complexity of highland/lowland linkages is significantly increasing. These interactions are multifaceted, involving not only ecological considerations but economic, social and political ones as well. In recent years important experience has been gained in terms of the ecological dimension of these linkages, but little attention has yet been given to the other aspects. Considerable effort is required to increase the knowledge and experience about these linkages, leading to more secure rights and opportunities for the different stakeholders in a watershed, better support to watershed management groups at different geographical scales and the formulation of integrated watershed management policies.

C. Policy and law

55. To support and foster action towards sustainable mountain development at the local level, adequate legal and policy mechanisms need to be developed, in particular at the national level. Although many countries have laws and policies that affect their mountain areas, to date, relatively few countries have enacted comprehensive national mountain policies or laws which directly address the special conditions and problems of mountain regions and those who inhabit them. At the national level, there is a need for legal and policy frameworks that recognize local property rights, apply full-cost pricing for mountain goods and services, offer adequate protection to fragile ecosystems and sacred sites, protect traditional knowledge through intellectual property rights etc. At the international and regional levels, stronger legal instruments are needed to ensure transboundary cooperation, thus leading to better human development and ecosystem conservation in areas that straddle political borders. Regional policy frameworks are also important in this respect and need to be further developed in the wake of the regional intergovernmental consultations that have been held in most regions since the United Nations Conference on Environment and Development.

D. Planning and management at the national and local levels

56. Many initiatives have been taken since the United Nations Conference on Environment and Development relating to mountain development for the benefit of local communities. However, one of the most urgent and daunting challenges is to increase conservation activities and encourage framework planning of watershed management and mountain development at the national and local levels. It is important in the period to come to effect more systematic programme formulation of mountain development, which will lead to the elaboration of local mountain community development programmes within participatory and decentralized approaches.

E. Natural hazards and risks

57. Natural hazards in mountain areas such as floods, landslides, avalanches and volcanic eruptions have received greater attention in recent years and may have been exacerbated by the El Niño/Southern Oscillation (ENSO) phenomenon. The degree to which human activities are influencing such hazards is very much debated. However, it is clear that the vulnerability of mountain communities to hazards has increased in industrialized countries — mainly due to increased infrastructure development — and in developing countries — due to population pressure and the expansion of activities into hazard-prone areas. Significant challenges lie ahead in terms of increasing knowledge about mountain hazards and of improved risk management.

F. Funding

58. As noted above, a major challenge to the successful implementation of chapter 13 is the mobilization of adequate funding. A much broader base of bilateral, multilateral and private-sector funding and financing than has so far existed is required in order to respond to the needs of mountain regions and their inhabitants. More concerted efforts at the national level could also provide additional resources. To date, a small number of donor organizations and countries have carried most of the financial burden of mountain development assistance. The International Year of Mountains provides an opportunity to mobilize the resources, both human and financial, on a sustained level, that are needed effectively to implement sustainable mountain development and conservation.

Notes

[1] See *Official Records of the Economic and Social Council, 1999, Supplement No. 9* (E/1999/29), chap. I, sect. C, decision 7/3, annex, para. 10.

[2] General Assembly resolution 53/24 of 10 November 1998, para. 2.